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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,262	08/21/2003	James M. DeHaan	7150.02.01	7479

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LAW OFFICE OF JOHN L. ISAAC
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EXAMINER

FANTU, YALKEW

ART UNIT	PAPER NUMBER
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2838

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/644,262

Applicant(s)

DEHAAN ET AL.

Examiner

Yalkew Fantu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 2 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 2, the phrase "the formula", and claim 5, the phrase "the slope" respectively lack antecedent basis so both claims are unclear.

The above are but a few specific examples of indefinite and functional or operational language used throughout the claims, and are only intended to illustrate the extensive revision required to overcome the rejections under 35 USC 112, second paragraph. The above-mentioned corrections therefore, are in no way a complete and thorough listing of every indefinite and functional or operational language used throughout the claims. Applicant is required to revise all of the claims completely, and not just correct the indefinite and functional or operational language mentioned. The following art rejections are given in view of the above rejections of claims under 35 USC 112, second paragraph. Therefore, the following art rejections are applied only as far

as the claims are understood in view of rejections made under the second paragraph of 35 USC 112.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kutkut et al (US 6,150,795) in view of Huykman et al (US 6,417,646).

With respect to claims 1, 9 and 14 Kutkut et al (hereinafter, Kutkut) discloses a method for equalizing the float voltage of a battery cell continuously receiving a float charge (col. 1, lines 5-8), said method comprising: monitoring the actual float voltage of the cell (col. 2, lines 1-6); establishing a predetermined relationship between an optimum desired cell float voltage and the bypass current required to maintain said optimum cell float voltage (col. 2, lines 1-6; col. 2, lines 55-61); means for measuring current for each cell (fig. 1, 36); comparing the monitored actual float voltage level of the cell with said optimum desired cell float voltage level and computing a desired bypass current based on said predetermined relationship (see fig. 22, wherein the 'I' vs 'V' graph is in a linear expressed by $Y=mX+b$); comparing the computed desired bypass current with the actual measured bypass current; and adjusting the actual bypass

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current to equal said computed desired bypass current, thereby equalizing the cell float voltage at said optimum level by regulating said bypass current and thereby varying the float current applied to said cell (col. 9, lines 51-57).

Kutkut, however, does not disclose bypass circuit and measuring the bypass current expressly. But, Huykman et al (hereinafter, Huykman) discloses a current bypass circuit (fig.1, I BYPASS) and a means to measure the bypass current (fig. 1, M; col. 3, lines 5-15).

Kutkut and Huykman are analogous arts because they are from the same field of endeavor namely battery charger equalizer and circuit for monitoring cells of a multi-cell battery.

At the time of the invention it would have been obvious to a person having ordinary skill in the art to provide a current bypass circuit and a means to measure as taught by Huykman to the battery charge equalizer of Kutkut to ensure any damage to the battery from excessive charging.

The motivation for doing would have been that the use of bypass circuit being pre-settable in a variable manner to bypass current above a desired high voltage limit for the cell. As the battery is being charged, the bypass circuit will shunt current around a cell when the preset voltage level is exceeded, thus preventing any damage to the cell (col. 1, lines 46-53).

Therefore it would have been obvious to combine Kutkut with Huykman for the benefit of battery cells bypass current above a desired high voltage limit to obtain the invention as specified in claims 1, 9 and 14.

With respect to claims 2, 13 and 15, Kutkut discloses a predetermined relationship comprises the formula $y=mx+b$ wherein y =the bypass current with $0 \leq y \leq y_{\text{maximum}}$ regulation current; x =the cell float voltage; m =the slope of the plot of bypass current vs. cell float voltage; and b =the current offset (see fig. 22, 'I' vs 'V' a linear graph as described above; col. 14, lines 15-34).

Regarding claims 3, 4 and 16, Kutkut discloses that varying 'Rs', the current sense resistor, the slope of the 'I' vs 'V' curve's the value of the slope 'm' and 'b' can be adjusted for battery result; the value of "m" and "b" are user adjustable (col. 15, lines 60-64).

With respect to claims 5, 17 and 18, Kutkut discloses the slope "m" includes a zero bypass current intercept point wherein there is a cell voltage "x" below which there is no bypass current to establish said current offset "b" (see fig. 22, denoted as "Dead band" area), and wherein the slope "m" further includes a maximum voltage regulation point which is the maximum cell float voltage that can be actively regulated by the bypass current (fig. 22, "Vm").

Regarding claim 6, Kutkut discloses that the step of computing the desired bypass current is based on comparing the monitored actual float voltage level of the cell and its intercept point along the slope "m" (see fig. 22 "I" verses "V" graph).

With respect to claims 7 and 19, Huykman discloses the step of comparing said desired bypass current with the actual measured bypass current includes the generation of a control signal directly actuating a proportional current bypass element (col. 1, lines

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13-14) which in turn adjusts the actual bypass current until the actual bypass current equals the desired bypass current (col. 1, lines 47-53).

With respect to claims 8 and 20, Kutkut discloses a method for equalizing the float voltage of a battery cell. Besides, Huykman discloses that the step of indicating the charge condition of the cell (fig. 1, L1, L2) as the desired bypass current is first compared to the actual bypass current by providing a signal which indicates that the cell is in one of three conditions, that of an overcharged condition (abstract, lines 1-3), a fully charged condition (col. 7, lines 17-18) or an undercharged condition (col. 7, lines 19-20).

The system as claimed in claims 10, 11 and 23, combined references of Kutkut and Huykman disclose a method for equalizing the float voltage of a battery cell. Besides, Huykman discloses float current bypass circuit (fig. 1, 'I BYPASS' circuit), actual bypass measuring means (fig. 1, R5 and 4) and said actual bypass current regulating means (fig. 1, M and controller 'C'). In addition to that Kutkut discloses that for each said cell (fig. 2, 31), are disposed in a single module electronically associated with said cell (fig. 1, 50: electrically connected to cell VB1)(claim 10); and each said module is powered by the cell with which it is electronically associated (fig. 1, 50 with VB1)(claim 11; col. 9, lines 3-6).

With respect to claim 12, Kutkut discloses wherein the current required to power each said module comprises approximately 0.04 Ampere (fig. 11, graph shows a current within one order of magnitude of 0.04A).

With respect to claim 22, Huykman discloses cell indicator elements further comprise means for automatic notification (fig. 1, 'H' host computer; col. 3, lines 25-27) to a remote station of an overcharged or an undercharged cell condition (col. 3, lines 32-34).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kutkut et al (US 6,150,795) in view of Huykman et al (US 6,417,646) further in view of Proctor et al (US 5,895,440).

Regarding claim 21, the combined references of Kutkut and Huykman disclose a module for maintaining the float voltage of a battery cell as mentioned above, but does not disclose three different colored indicator lights representing particular cell condition.

Proctor et al, however, discloses that cell condition indicator elements (col. 6, lines 60-67) comprise three different colored indicator lights (green, yellow and red: col.7, lines 3-7), each color representing one particular cell condition (col. 6, lines 14-20).

Kutkut, Huykman and Proctor et al are analogous arts because they are from the same field of endeavor namely battery charger equalizer and cycles status indicator circuit for monitoring cells of a multi-cell battery.

The reason for doing would have been that the use of color indicator using a display means, such as LED helps displaying battery status of charge and the historical values determined by the controller or microprocessor of the battery (abstract) associated to each cell. Indicating color differences associate to a different battery status (fully charged, acceptable, very low)(col. 7, lines 27-30). It also indicates to

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different level of voltages 2.03, 2.37 and 2.5 volts per cell (col. 7, lines 12-18) indicating whether the battery needs to be charged or not.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yalkew Fantu whose telephone number is 571-272-8928. The examiner can normally be reached on M - F: 7- 4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl D. Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


KARL EASTHOM
SUPERVISORY PATENT EXAMINER